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ABSTRACT

For many persons, a satisfying group experience involves reaching a desired level of personal participation. The experimental laboratory studies of communication network groups have been the most rigorous attempts at understanding the effects of differential participation. It has been shown that centrality of a subject's position influences: (1) his sense of being a part of the group, (2) the amount of information available to him, and (3) his importance in the process of locomotion and progress toward group goals. These are aspects of member participation. The present study used decision conferences incorporating either centralized or decentralized decision structures to investigate the resulting attitudinal consequences of these conferences for the members relative to their performance, position, and participation in the group decision process. (Author)

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EFFECTS OF GROUP STRUCTURE
ON MEMBER ATTITUDES AND SATISFACTIONS
IN DECISION CONFERENCES

by

David L. Ford, Jr.

Paper No. 448 - April 1974

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For many persons, a satisfying group experience involves reaching a desired level of personal participation. The experimental laboratory studies of communication network groups have been the most rigorous attempts at understanding the effects of differential participation. It has been shown that centrality of a subject's position influences (1) his sense of being a part of the group, (2) the amount of information available to him, and (3) his importance in the process of locomotion and progress toward group goals. These are aspects of member participation. The present study used decision conferences incorporating either centralized or decentralized decision structures to investigate the resulting attitudinal consequences of these conferences for the members relative to their performance, position, and participation in the group decision process.

Effects of Group Structure on Member Attitudes and
Satisfactions in Decision Conferences^{1,2}

In the literature of social psychology a number of studies have reflected a continuing interest centered around factors contributing to group member satisfaction or dissatisfaction. A chief factor that appears to influence both group and individual behavior is the limitations upon (or opportunities for) the amount and kind of interaction within the group network structures. A number of studies have demonstrated that (1) position in a group's communication network affects morale and satisfaction, (2) the more access a member has to task-relevant information, the greater are his satisfactions, and (3) the more autonomy a member has in the group network (usually in a position of high centrality), the higher is his morale and satisfaction (Heslin and Dunphy, 1964; Shaw, 1954; Cohen, Robinson, and Edwards, 1969; Cohen, 1964).

The generality of hypotheses suggested by these general findings was tested in the present study using experimental laboratory groups in order to ascertain the attitudinal consequences of structure in task groups and to establish the magnitude of these consequences relative to member characteristics such as performance, participation, and position in the task groups. The task groups were involved in decision making activities which met the essential or distinguishing requirement of a group decision making situation, that is, the selection of one or more alternatives from a set of available options.

METHOD

The subjects were 72 volunteer undergraduate and graduate business and engineering students at a large midwestern university. They were randomly assigned to one of two types of three-man experimental network groups--wheel (centralized) and all-channel (decentralized). Each group had a designated leader. All interaction and communication between subjects was by means of a telephone system in which the experimenter could establish certain channels between different members of the group in order to produce the required network and configurations.

Design

The overall design for the experiment was a 2 (group structure) X 2 (position in network) factorial design for the seven dependent variables considered. As noted above, group structure was either centralized or decentralized, and the group members occupied one of either two kinds of positions: leader or peripheral.

Procedure

Subjects were run nine at a time in subgroups of three. Each cluster of nine was formed into two-level hierarchical organizational structures, with the lower level consisting of the three subgroups and the upper level being a task force group composed of the leaders from each of the three subgroups (See Figure 1). The decisions and task

Insert Figure 1 Here

products of each of the subgroups at level 1 served as inputs to the task at level 2. The task required of each of the subgroups was to evaluate (rate) on a 0-100 scale a set of 15 hypothetical teaching professors for recommended awards from which the five highest became the group's recommendations. These recommendations were then acted upon or evaluated by the task force group and final selection and recommendation of the top five professors determined. Subjects had originally evaluated the professors privately prior to the group. Each subgroup originally evaluated a different set of 15 professors and recommended five for further consideration by the task force group. The group structure at level 1 was the same for all groups within a single cluster and was either a wheel or all-channel group; the structure at level 2 was that of an all-channel network group. Thus, two forms of organizations were created: predominantly decentralized and completely centralized.

Measurements

Data for the analyses of this study were obtained by having the subjects complete a post-discussion questionnaire following their group discussions. This questionnaire was designed to measure the attitudes and satisfactions of the group members with respect to several aspects of their total group experiences. These measures incorporated the use of 100-point rating scales for recording: a) overall satisfaction with the group process and b) satisfaction with the group

decision. Seven point bi-polar semantic differential scales, similar to those developed by Scott (1967), were used for the measurement of member attitudes and satisfactions with respect to five specific group participation dimensions: a) attitude toward one's participation in the group, b) attitude toward one's performance in the group, c) attitude toward one's participation in the group, d) attitude toward one's status in the group, and e) attitudes toward other members of the group. A similar post-discussion questionnaire was administered to members of the task force group following their discussion meeting.

Hypotheses which were tested in the study are presented below in Table 1.

Insert Table 1 Here

Results

Data relevant to the testing of the twelve hypotheses shown in Table 1 are presented in Tables 2 and 3. Statistical analyses and tests of the hypotheses involved t-tests for differences in mean scores on the appropriate dependent variables and 0-1 regression analysis of six of the dependent variables, with group structure (S), position in network (P), and their interaction (S X P) as independent variables. The regression analysis was deemed more appropriate than analysis of variance due to unequal cell sizes. Table 3 presents the results of the analysis.

Insert Table 2 Here

Insert Table 3 Here

Hypothesis 1 was supported. Highest overall member satisfaction was associated with the predominantly decentralized organization ($p < .025$).

Hypotheses 2, 3, and 4 were supported. Subgroup members in all channel groups had significantly more positive attitudes ($p < .01$) toward their performance, position, and participation in the subgroups than did members of wheel groups. The strong position effect for these dependent variables can be seen in the outcomes of the regression analysis (See Table 3).

Hypotheses 5 and 6 were not supported. Leaders of both types of groups did not differ significantly in their attitudes toward their position and participation.

Nonleader (peripheral) members of all channel groups had significantly more positive attitudes toward their position and participation ($p < .01$) than nonleader members of wheel groups, thus supporting hypotheses 7 and 8. In addition, peripheral members of all channel groups held their group leaders in higher esteem than did peripheral members of wheel groups ($p < .05$), thereby supporting hypothesis 9.

Hypothesis 10 was not supported. All channel group members were not significantly more satisfied with their group's decision than were members of wheel groups. However, the difference was in the predicted direction.

Hypothesis 11 was not supported. The change in position from leader at level 1 to nonleader at level 2 for members of wheel groups did not affect their satisfaction with their new positions at level 2. Likewise, the change in position from leader at level 1 to nonleader at level 2 for members of all-channel groups did not result in lower satisfaction with position in the group, thereby supporting hypothesis 12.

The results of the regression analysis clearly indicates that group members' position in the group network significantly influences their reactions to the group decision process. In general, peripheral or nonleader members of all channel network groups had more favorable attitudes and satisfactions than did peripheral members in wheel groups or leaders in both wheel and all-channel groups with respect to the six dependent variables examined. The significant group structure X position-in-network interactions for four of the six dependent variables are due primarily to all-channel leaders having lower satisfaction scores and wheel network leaders and nonleaders having higher scores, on the average, with respect to group process satisfaction and satisfaction with group decisions. However, the structure X

position interaction for member attitudes toward their position and performance in the group can be attributed to all channel leaders and nonleaders having higher scores on these measures than their counterparts in wheel network groups.

The significant interactions for group structure X position are understandable in light of the centrality of a leadership position, in general, whereby much of the communication in group discussions tends to be directed toward the leader. The results of the regression analysis provide additional insight into understanding the outcomes associated with the testing of the research hypotheses.

DISCUSSION

The propositions of Collins and Guetzkow (1964) that (1) positions of high power produce satisfaction, and (2) positions of centrality or autonomy produce satisfaction received only mild support in the present study. The often-found satisfaction hierarchy of leaders in wheel groups being the most satisfied, followed by members of all channel groups, followed by peripheral members of wheel groups, did not appear to be as strong in the present study as it has been in earlier studies, at least for leaders of wheel groups. The hypothesized pattern produced significant differences in attitudes only for the nonleader members of both kinds of groups. However, irrespective of leader-nonleader roles, members of all channel groups, in

general, had more positive attitudes toward their group experiences than did members of wheel groups.

These findings could be due to several causes. In their review of various small group decision making studies, Collins and Guetzkow (1964) propose that success on the group task will produce satisfaction, i.e., the degree of member satisfaction is a function of the adequacy of the problem solving. Success, in terms of amount of work or agenda completed in a meeting, contributes to the satisfaction of the conference participants. It has been shown by Ford (1972) and Ford and Cummings (1973) that the all-channel groups were significantly faster than wheel groups in completing their assigned tasks. Speed or greater sense of closure in the all-channel groups could possibly have contributed to the members' satisfactions such that any increase in satisfaction of the leaders of wheel groups due to their position advantages could have been offset or negated. The longer it takes to reach a decision on a substantive topic, the lower the satisfaction (Collins and Guetzkow, 1964), so that length of time to complete the task may have had attenuation effects on the wheel leaders' satisfactions and attitudes.

An alternative explanation to account for the findings could be that the group leaders were not actually leaders in a true sense in that (1) they gave no orders, and (2) they did not have additional information over and above that possessed by other members of the

group, thereby diluting the hypothesized effect for leaders in wheel groups by removing the "causes" behind the variable.

Removal of these latter constraints should prove useful in future organizational studies in aiding our understanding of the issues involved. Overall, however, it does appear that imposing structure in a group involved in decision making activities, which limits the amount and kind of interaction within the group, can have negative effects upon the attitudes and satisfactions of the group's participants.

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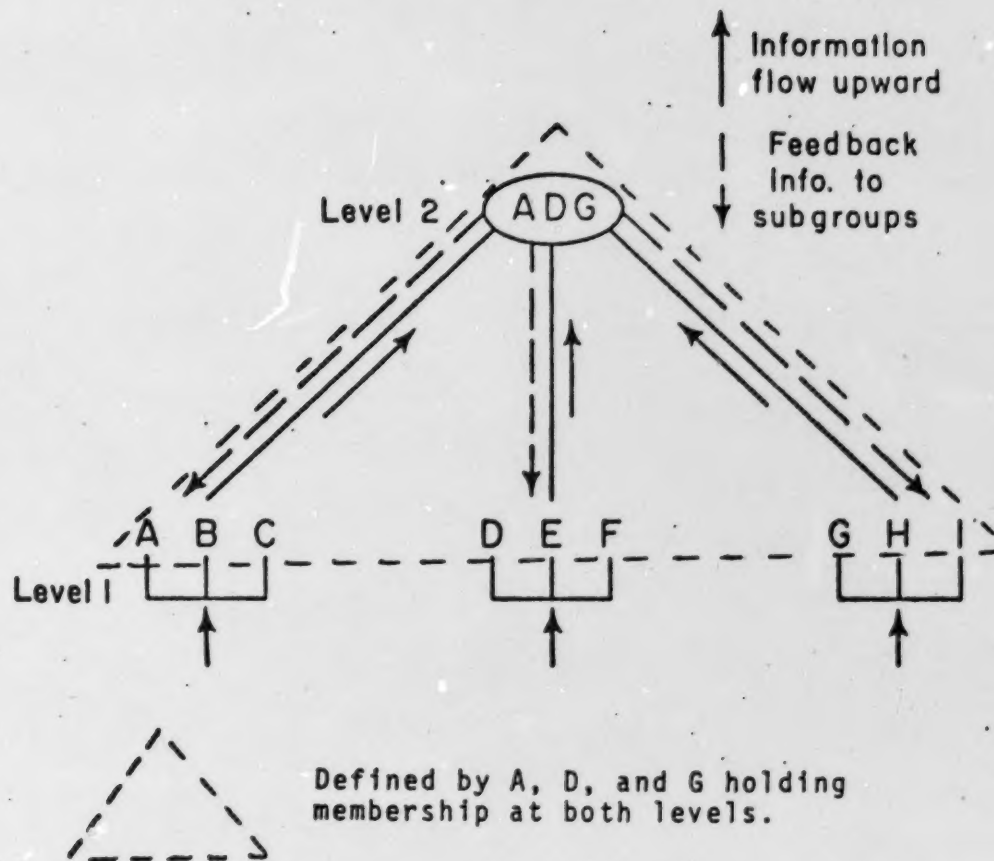


FIGURE 1
Organizational Structure

TABLE 1

RESEARCH HYPOTHESES

1. The decentralized organization will be higher on overall member satisfaction than the centralized organization.
2. Subgroup members in all-channel groups hold more positive attitudes toward their own performance than members in wheel groups.
3. Subgroup members in all-channel groups hold more positive attitudes toward their position than members of wheel groups.
4. Subgroup members in all-channel groups hold more positive attitudes toward their participation than do members of wheel subgroups.
5. Leaders of wheel subgroups hold more positive attitudes toward their position than leaders of all-channel subgroups.
6. Leaders of wheel subgroups hold more positive attitudes toward their participation than leaders of all-channel subgroups.
7. Peripheral of all-channel groups hold more positive attitudes toward their position than peripheral members of wheel subgroups.
8. Peripheral members of all-channel groups hold more positive attitudes toward their participation than peripheral members of wheel groups.
9. Peripheral members of all-channel groups hold more positive attitudes toward their leaders than do members of wheel subgroups.
10. Member satisfaction with their group's decision will be higher in all channel groups than in wheel groups.
11. Satisfaction with position in group will decrease for a leader coming from a central position of a wheel network at level 1 to any position in an all-channel group at level 2.
12. Satisfaction with position in network will not decrease for a leader coming from an all-channel group at level 1 to any position in the supergroup at level 2.

Footnotes

1. This research was supported in part by a grant from the Department of Industrial Engineering, University of Wisconsin. The paper is based in part on a dissertation submitted in partial fulfillment of the requirements for the Ph.D. degree at the University of Wisconsin.
2. Requests for reprints should be sent to David L. Ford, Jr., Krannert Graduate School of Industrial Administration, Purdue University.

TABLE 2

MEAN POST DISCUSSION SATISFACTION AND ATTITUDE SCORES OF MEMBERS
TOWARD VARIOUS ASPECTS OF GROUP EXPERIENCE^{a,c}

Type of Subgroup	Overall Satisfaction	Satisfaction With Group Decision	Position in Group	Performance in Group	Participation in Group	Attitude Toward Other Members	Attitude Toward Leaders
Wheel	72.65 ^b	81.56 ^b	5.08	5.13	5.13	5.41	--
			4.57	4.92	4.71	--	5.46
All Channel	83.03	82.97	5.21	4.86	5.17	6.21	--
			5.57	5.62	5.62	5.81	5.81
Task Force Group	69	---	5.00	4.89	5.18	4.77	--
Task Force Group	83	---	5.20	5.25	5.36	5.36	--

a Note: Where one entry appears in a cell, the values for the group leader and members have been combined. They are separated in those cases where two entries appear in a cell.

b Scores in this column were recorded using a 0-100 scale.

c Except for columns indicated by footnote b, scores are based on values obtained using a 7-point semantic-differential scale where 1 = low, 7 = high, and 4 = neutral or indifference.

TABLE 3

SUMMARY OF REGRESSION ANALYSES ON SIX DEPENDENT VARIABLES

Partial F-Ratios and R Values for Each of the Dependent Variables ^a

Independent Variables	Overall Satisfaction with Group Process	Satisfaction with Group Discussion	Attitude Toward Position in Group	Attitude Toward Performance in Group	Attitude Toward Participation in Group	Attitude Toward Status in Group
Group Structure (S)	<1	4.50*	<1	1.33	<1	<1
Position in Network (P)	1.42	6.08*	68.30**	82.36**	9.77**	5.99*
S X P	13.10**	7.63*	6.13*	5.48*	1.86	<1
Overall R Value	.423**	.429**	.723**	.751**	.394**	.305

* $P \leq .05$
 ** $P \leq .01$

^a Note: $df = 1/68$ for all partial F values; $df = 3/68$ for all R values.

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